



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8**

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Ref: 8P-AR

Ned Pettit
Environmental Manager
Holcim, Inc.
4070 Trident Road
Three Forks, MT 59752

Re: *Best Available Retrofit Technology (BART) Analysis, Holcim (US) Inc.*

Dear Mr. Pettit:

On February 28, 2007, EPA Region 8 sent a letter to Holcim (US) Inc. (Holcim) that provided the results of our "subject to" modeling for Best Available Retrofit Technology (BART) and requested that Holcim perform a BART analysis and submit it to EPA Region 8. On July 6, 2007, Holcim submitted a BART analysis to EPA that was performed by Bison Engineering, Inc. We would like to thank you for your submittal and want to recognize the effort that has gone into developing the BART analysis for Holcim.

We have completed our initial review of the July 6, 2007 submittal and have determined that there is additional information and analysis needed from Holcim in order for us to complete our review. Following are EPA Region 8's comments. With the exception of the EPA Control Cost Manual, documents referenced in our comments have been attached for your convenience. In addition, we are providing a copy of comments on the Holcim BART analysis submitted to EPA on November 9, 2007 from the USDA Forest Service Northern Region.

SO₂ Emissions and Controls

- The analysis used 10 years as the basis for the remaining useful life of the scrubber, however the useful life of these control technologies is expected to be 15 years based on information from the EPA Control Cost Manual ("EPA Air Pollution Control Cost Manual", Sixth ed., EPA-452-02-001, January 2002, Section 5.2, Chapter 2, page 2-51). Holcim needs to reanalyze the annualized costs for the scrubber using fifteen years as provided in the EPA Control Cost Manual.
- In section 4.3.2, Holcim eliminates fuel substitution as a means for reducing SO₂ referencing a statement in the BART Guidelines which reads: "Pollution prevention: use of inherently lower-emitting processes/practices, including the use of control techniques (e.g. low-NOX burners) and work practices that prevent emissions and result in lower "production specific" emissions (note that it is not our intent to direct States to switch fuel forms, e.g. from coal to gas)" (see 70 FR 39164, July 6, 2005). EPA did not intend this to mean that sources should

not be looking at potentially switching to a lower sulfur content coal (or coke) if the source is already using coal (or coke) for fuel. The language is meant for situations where a facility would be looking at switching from one type of fuel to another, such as coal to natural gas. Fuel substitution to lower the fuel sulfur content can be a very cost effective means for reducing SO₂ emissions and should be analyzed.

- The BART analysis estimates the purchase cost for a venturi scrubber at \$14,500,500. We have cost estimate information for venturi scrubbers that is significantly less than the cost estimate you provided. Please provide documentation for this purchase cost.
- The conclusions presented in Table 4-2 and other parts of this document are driven by the high capital equipment costs for the wet scrubber. If the information requested above differs from the original estimated cost of \$14,500,500, we ask that Holcim reanalyze the parts of the BART analysis that are affected by this figure.

NO_x Emissions and Controls

- Section 4.4 of your analysis lists proper kiln design and operation as one of the possible control options and as the baseline in the analysis for other control options but does not provide information on the current design and operation of the kiln. Please provide information on the current kiln design and operation and an analysis on whether additional reductions can be achieved through proper kiln design and operation.
- In addition to the installation of a fixed inlet to the clinker cooler and the installation of a low NO_x burner, Holcim should continue to consider mid-kiln firing and Selective Non-Catalytic Reduction (SNCR) as viable BART control technologies for NO_x emission reduction. Mid-kiln firing is expected to achieve an emission reduction of 45% or more (see Hansen, Eric R. Technical Consultant, Cadence Environmental Energy Inc. “Staged Combustion for NO_x Reduction Using High Pressure Air Injection.” IEEE2002). SNCR has been applied to wet kilns and can reliably attain a NO_x emission rate of 800 mg/m³, and in most cases attain a rate of 500 mg/m³ (see Scur, P. Cemex Ostzement, Redersdorf. Hoppe, Dr. Forschungsinstitut der Zementindustrie, Dusseldorf. “The Present State of NO_x Abatement with the SNCR Process.” Cement International No. 2/2006, Volume 4., ISSN 1610-6199 and *Assessment of NO_x Emissions Reduction Strategies for Cement Kilns – Ellis County – Final Report*. Prepared by ERG, Inc. for Texas Commission on Environmental Quality. TECQ Contract No. 582-04-65589, Work Order No. 05-06. July 14, 2006). Please provide additional analyses and documentation for both of these potential control measures.
- Table 4-4 lists the efficiency for mid-kiln injection of tires as 30%. A value of 40% for wet kilns has been documented and we request that Holcim provide a revised analysis for this control option using a value of 40% for the wet kiln or an analysis of why 40% is not achievable (see *NO_x Control Technologies for the Cement Industry*. Battye, R., S Walsh, J. Lee-Greco, EC/R Incorporated prepared for U.S. EPA under contract No. 68-D-98-026. September 19, 2000. Table 5-7).
- The document states that details of the cost analysis for low-NO_x burners, and mid-kiln fuel injection are included in Appendix C. However, Appendix C did not include these analyses. Please submit the details of the cost analysis for low-NO_x burners and mid-kiln injection.
- Using the permitted NO_x emission rate to determine tons of NO_x removed is problematic. The permitted value is very high relative to the actual emissions. The maximum NO_x

emission rate during the three year period of 2001-2003 was reported as 784 lbs/hour. The permitted value is 1,568 lbs/hour, or twice the maximum value reported for the three year period. Using the permitted value as the baseline could give a calculated post control emission rate larger than the actual uncontrolled emissions. For example proposing a 20% NO_x reduction with a permit limitation of 1,254 lbs/hour would allow an emission increase from the currently reported maximum hourly rate of 784 lbs/hour. It is appropriate to use actual emissions if those are representative of how Holcim has been operating in the past. In addition, Holcim used actual emissions to model visibility for the BART analysis and the emissions used in the modeling and the rest of the analysis need to be consistent. Please revise the analysis using actual emissions.

Particulate Matter Emissions and Controls

- Holcim did not provide any design parameters for the existing PM control technologies on the ESP on the kiln and the baghouse on the clinker cooler. It is possible that BART for PM for these two sources could include additional controls and/or increased performance of the existing technologies. The BART Guidelines state that “For emission units subject to a BART review, there will often be control measures or devices already in place. For such emission units, it is important to include control options that involve improvements to existing controls and not to limit the control options only to those measures that involve a complete replacement of control devices” (see 70 FR 39164, July 6, 2005). We ask that Holcim submit the design parameter information for PM controls on the kiln and clinker cooler and evaluate the possibility of additional controls and increased performance of the existing equipment.

Overall Comments

- Your analysis did not include a conversion from a wet kiln to a semi-dry or dry kiln. Several documents in the literature indicate that both of these demonstrated options would offer substantial emissions reductions at potentially reasonable costs (see *Assessment of NO_x Emissions Reduction Strategies for Cement Kilns – Ellis County – Final Report*. Prepared by ERG, Inc. for Texas Commission on Environmental Quality. TECQ Contract No. 582-04-65589, Work Order No. 05-06. July 14, 2006 and *A Unique Approach*. Menke, T., Jepsen, O.L., and Keefe, B.P. Review No. 136. Reprint from IEEE-IAS/PSCA 2001 Cement industry Technical Conference May 2001 and published in *International Cement Review*, July 2001). Please include an analysis that addresses a conversion from a wet kiln to a semi-dry or dry kiln.

There are also several locations in the document that may have typographical errors.

- On page 3-3 in Section 3.3 it states that the BART modeling analysis performed for Holcim used the permitted NO_x PTE to establish the baseline visibility impacts. The permitted value is given as 1,568 lbs/hr on a rolling 30-day average (6,868 tons/year). As provided in Table 3-2, the rate that was modeled is 784 lbs/hour.

- On page 4-11 the second technology analyzed 'wet SO2 scrubber impacts' begins with a (c) rather than a (b). Is there a missing analysis?
- On page 4-23 the web address for the CPI multiplier does not work

In order to move forward with the BART process, we ask that you submit the requested information and analysis to our office within thirty days from the date of this letter.

Once again, we would like to thank you for submitting the BART analysis and acknowledge the work that has gone into preparing this analysis. If you have any questions, please contact Laurel Dygowski at (303) 312-6144.

Sincerely,

Callie A. Videtich, Director
Air and Radiation Program

